

## EXECUTIVE SUMMARY

As directed under Engrossed Substitute House Bill 2496 and Second Engrossed Second Substitute Senate Bill 5596, the habitat conditions of salmonid-producing watersheds within WRIA 20 are reviewed and rated. The worst habitat problems are summarized here, but an overview of all the habitat ratings is provided in Table 16 in the Assessment Chapter. The Assessment Chapter also specifies the criteria used to rate habitat conditions. Detailed discussions for each of these habitat conditions can be found within the Habitat Limiting Factors Chapter of this report. Maps of updated salmon and steelhead trout distribution, culverts and other blockages, large woody debris (LWD) and riparian conditions, and floodplain complexes were prepared and are located in a separate electronic file on this disc. This first round report examines salmon and steelhead trout habitat conditions. Later versions will address habitat issues for other salmonids.

The streams addressed in this report include all salmon- and steelhead-producing streams in the following basins: Waatch, Sooes, Ozette, Quillayute, Goodman, Mosquito, Hoh, Cedar, and Steamboat. These are discussed in order from north to south. In the north end of the WRIA, there are insufficient data to adequately assess the major habitat conditions in the Waatch and Sooes basins. However, known current problems include numerous blockages throughout the Waatch and Sooes basins with riparian road floodplain impacts for Snag Creek and Thirty Cent Creek in the Sooes. Both the Waatch and Sooes basins are greatly impacted by high water temperatures, but specific data to assess the cause of the warm temperatures were not found. Stock status for many species is depressed in these streams, suggesting a lack of marine-derived nutrients.

In the Ozette Basin, numerous “poor” habitat conditions are found and appear to be linked. The Ozette River, which drains the lake to the ocean, has been cleared of LWD. This lack of LWD has been suggested to contribute to possibly reduced water level fluctuations in Lake Ozette. Invasive plants, such as Reed canarygrass, are found along the lakeshores. Sediment is a major habitat limiting factor, resulting in degraded spawning habitat for lake spawning sockeye, but the cause of the high levels of fines is uncertain. Some of the larger tributaries draining into Lake Ozette (Umbrella Creek, Big River, Siwash Creek) are incised with banks hardened by Reed canarygrass. Fine sediment levels are high in these streams as well. Road densities are high in this basin, likely contributing to the sediment loads. Throughout the area, “poor” LWD and riparian conditions are found. Other problems include warm water temperatures, poor hydrologic maturity, an altered estuary, and a lack of marine-derived nutrients.

The Quillayute basin is the largest basin in WRIA 20. It consists of four major sub-basins: the Dickey, Soleduck, Calawah, and Bogachiel. Each sub-basin has unique habitat characteristics and problems, but all eventually drain into a significantly altered estuary. The estuary is regularly dredged, and has armored and diked banks. Estuarine habitat is extremely limited within WRIA 20, and the Quillayute estuary is the largest estuary in the WRIA. It is near known surf smelt (salmonid food item) spawning grounds and kelp and eelgrass habitat, important for salmonid rearing. Many upstream habitat problems are translated to the estuary and near shore habitat. Of particular concern are

increased sedimentation and water flows. The increased flows are likely a result of several upstream problems, notably incised channels, reduced levels of LWD, and a loss of hydrologic maturity.

The Dickey sub-basin is well known for its production of coho salmon. It consists of plentiful sloughs, wetlands, and small streams, and is dominated by low gradient habitat. Because of the low-gradient nature, mass wasting is rare. However sedimentation is still a major habitat problem and is predominantly due to roads. Riparian impacts occur throughout the Dickey and are worsened because of windthrow. The strong windstorms in the winter destroy the riparian buffers left after recent timber harvest in susceptible areas. Warm water temperatures are another “poor” habitat condition throughout the Dickey sub-basin, and may be contributing to an increased distribution of squawfish, known predators of salmon. Blockages, such as culverts, are another major habitat problem in this sub-basin. The naturally low-gradient conditions result in a lack of natural blockages for salmonids, yet numerous culverts exist and should be addressed. Low water flows in the summer are thought to limit the production of salmon and steelhead. Impacts that worsen low flows include a reduction of fog drip due to a loss of older conifers within the watersheds, as well as altered wetlands due to increased road sedimentation and loss of wetland riparian vegetation. While historically, LWD was very abundant in these streams due to the low-gradients and hence, lack of downstream transport, LWD levels in the mainstems, especially in the East Fork Dickey River have recently decreased to low levels. Flooding in December, 1999 not only washed out LWD in the East Fork, but has also resulted in signs of channel instability. Riparian roads impact the floodplain conditions in Coal and Colby Creeks.

The Soleduck sub-basin lies partly within the Olympic National Park (upper reaches) and partly in timber-managed, agricultural, and residential development. The contrast between the pristine habitat conditions within the Park is sharp compared to conditions further downstream. Outside of the Park boundaries, numerous major habitat problems exist. Excessive sedimentation is a problem and stems mostly from landslides. High road densities are associated with the sedimentation problems. High levels of fine sediments are found in many Soleduck tributaries, which degrade the quality of spawning habitat. Areas of “poor” LWD and riparian conditions are other problems. The Soleduck drainage is naturally limited in wetland habitat, yet continued loss of wetlands and off-channel habitat occurs. Warm water temperatures are a problem in the summer, potentially impacting adult migration and spawning of summer chinook and a unique summer coho run. A large potential habitat problem is the over-allocation of water from the river. Contributing to summer low flows and warm water temperatures is the “poor” hydrologic maturity (loss of fog drip, change in hydrology) outside of the Park boundaries. Blockages are a known major problem within Gunderson and Tassel Creeks.

The Bogachiel sub-basin is lacking in specific data regarding many of the habitat conditions assessed in this report. Considering the number of salmon stocks and extent of salmon production from this drainage, this is a major data need. Based upon professional judgement, some of the larger habitat problems for the Bogachiel mainstem

include “poor” riparian and LWD conditions downstream of the Olympia National Park boundaries, as well as an aggraded mainstem that worsens downstream. Collapsing banks are a problem along the lower mainstem, and fines from exposed clay layers likely degrade spawning habitat. Warm water temperatures are a documented habitat problem in the lower Bogachiel. Habitat conditions within the Olympia National Park (upper reaches of the Bogachiel) are excellent.

The Calawah sub-basin has extensive landslide problems, mostly relating to older roads. Side-cast roads are a particular concern, and in general high road densities are found in the South Fork Calawah and in the headwaters of the North Fork Calawah. The excessive sedimentation is thought to contribute to dewatering in Hyas Creek, the North Fork Sitkum River, and Rainbow Creek. Channel instability is a major problem throughout the sub-basin as well, and is likely a result of the excessive sedimentation, low levels of LWD and riparian road impacts. Floodplain problems such as incision and riparian roads are significant in the North Fork Calawah, Cool Creek, Devil’s Creek, the South Fork Calawah, and Hyas Creek. Levels of LWD are “poor” in many areas of the South Fork drainage, and warm water temperatures are a documented problem in the South Fork Calawah.

A significant portion of the Hoh basin lies within the Olympic National Park, but downstream of the Park, considerable habitat problems exist. Debris flows are common and devastating, resulting in scoured, incised channels with few spawning gravels and LWD. Channel incision has exposed clay layers that contribute fines into the streams, further degrading salmonid habitat. The sources of sediment loads are primarily mass wasting and road erosion. Downstream of the Park boundaries, there are many areas of “poor” LWD and riparian conditions. Access problems from culverts and cedar spalts are numerous within the Hoh basin and are a major limiting factor. The spalts have degraded water quality, riparian and channel conditions as well. Floodplain complexes are vital habitats within the Hoh basin, providing excellent rearing and winter refuge habitat. The loss and degradation of these floodplain complexes are significant impacts. Riparian roads are another extensive floodplain problem in the Hoh basin. Reductions in hydrologic maturity have occurred in areas of the middle Hoh basin, and contribute to degraded floodplain habitat as well as a potentially altered flow regime. The loss of fog drip is a major concern pertaining to low summer flows in the Hoh.

The smaller independent salmon and steelhead-producing streams include Goodman Creek, Mosquito Creek, Cedar Creek, and Steamboat Creek. Few habitat data are available for these streams, and this is a data need. However, biologists have noted that sedimentation and an altered riparian are problems in some reaches of all of these creeks. Numerous blockages from either culverts or spalts have been documented in Cedar and Steamboat Creeks. In addition, the middle reaches of Goodman Creek have low levels of LWD.